

*Synopsis of the First Annual
Report of the Astronomy and
Astrophysics Advisory
Committee (AAAC)*

*Robert D. Gehrz, Chair
University of Minnesota*

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AAAC Charter (1)

- *On a continuing basis, AAAC will provide advice upon request to both the National Science Foundation and the National Aeronautics and Space Administration on selected issues within the field of astronomy and astrophysics of mutual interest and concern to the two agencies. Astronomy and Astrophysics is understood to encompass observations and theoretical investigations of astronomical objects and phenomena, including the sun and solar-system bodies.*
- *Four meetings per year*
- *Annual Report due at OMB and Congress by March 15th*

AAAC Charter (2)

AAAC activities will include assessment of and recommendations concerning:

- *The identification of gaps and duplication between the two agencies, in research and analysis programs as well as in missions, observatories, facilities, archives, etc.*
- *Advice on coordinating the development of the strategic plans of the two agencies for astronomy and astrophysics*
- *Advice on specific areas which may benefit from coordinated formulation, solicitation of proposals for research and/or hardware development, and financial support.*
- *In addition, AAAC will conduct specialized studies when requested by the agencies. These studies will be published as reports, if appropriate.*

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***SUMMARY OF THE CONTENTS
OF THE FIRST ANNUAL
REPORT OF THE AAAC***

Statement on the Status of Astronomical Research at NSF

- *Endorsement of NSF long-range planning activities to respond to the NRC reports “Astronomy and Astrophysics in the New Millenium” and “Connecting Quarks to the Cosmos”*
- *Praise for the NSF-NASA-DOE Interagency Working Group charged with responding to “Connecting Quarks to the Cosmos”*

Statement on the Status of Astronomical Research at NASA

- *Endorsement of the development plan for JWST*
- *Concern about the delay of key components of the “Beyond Einstein” Program*
- *SM-4 Mission cancellation discussed in separate section of the report*

Statement on Developments in Astrophysical Research at DOE

- *Endorsement of the DOE Office of High Energy Physics in research efforts related to astronomy and astrophysics*
- *Applaud collaborations with other agencies on JDEM and LSST*

Statement on the Consequences of the Cancellation of the SM-4 Mission on A Coordinated Effort in Research in Optical Astronomy

- *Express concern that this will be a major scientific loss*
- *Wording of the recommendation is still under development by the AAAC*

The Annual AAAC Report Identifies four major ventures that will benefit from an integrated management approach.

- *They are consistent with the long range plans defined in "Astronomy and Astrophysics in the New Millennium" and "Connecting Quarks with the Cosmos."*
- *Their fulfillment requires the existence of a strong technical infrastructure*
- *Timely development of enabling technologies is required*

Understanding the formation and chemical evolution of galaxies within billion years of the Big Bang, and the formation of stars and planets

- *James Webb Space Telescope (JWST)*
- *Giant Segmented Mirror Telescope (GMST)*

Progress on these scientific objectives is heavily dependent on GSMT being developed on the same timescale as JWST, requiring an aggressive technology development program being initiated immediately.

Determining the nature of the dark energy and dark matter in the Universe

- *Large Synoptic Survey Telescope (LSST)*
- *Joint Dark Energy Mission (JDEM)*

These perform wide-area supernova survey and cosmic gravitational lensing surveys. They should operate on comparable timescales. LSST is identified in the 2002 NRC report "New Frontiers in the Solar System: An Integrated Exploration Strategy" as a key facility for solar system science and for detecting solar system objects down to 300-m that are potentially hazardous to the Earth's biosphere. The broad interest in this program invites a coordinated implementation effort between NSF and NASA (and other interested agencies).

Probing the temporal and structural development of solar magnetic fields and activity through contemporaneous observations

- *Solar Dynamics Observatory (SDO)*
- *Advanced Technology Solar Telescope (ATST)*

The contemporaneous observations will only be realized if ATST can be put on a fast development track starting immediately.

Investigations of the polarization of the Cosmic Background Radiation (CMBR) to detect the signature of inflation using a combination of facilities

- *Wilkinson Microwave Anisotropy Probe (WMAP)*
- *Ground-based microwave telescopes at several sites*
- *Long Duration Balloon Flight payloads*

These ventures will benefit from interagency collaboration because of mutual scientific and programmatic interests, and complementary technology capabilities. They are ripe for development now.

Successful pursuit of these ventures will require development of enabling technologies

- *Support for instrumentation development, computing, laboratory measurements, and R&A*
- *Availability of large data bases through the National Virtual Observatory (NVO)*